NOTE VIII.

ON A NEW GENUS AND SPECIES OF PARASITIC ACARI

BY

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(With 10 figures).

Varroa, nov. gen.

This most remarkable genus probably belongs to the subfamily of *Laelaptinae*. Though the male is unknown to me, I do not hesitate to place it here, because the female, concerning the dorsal and ventral shields, seems to be nearest related to *Hypoaspis myrmecophilus* (Berlese) and *Hypoaspis Canestrinii* (Berlese) which are provided too with metapodial as well as with inguinal shields, a rare coincidence; and concerning its being covered dorsally with so numerous hairs, — to *Hypoaspis arcualis* (C. L. Koch).

The reason why in my opinion the present mite belongs to a hitherto unknown genus, is, that the mandibles in the female sex lack the upper-jaw and have a fixed, not a movable, under-jaw. I think it is not senseful to enlarge at present the number of generic characteristics, for fear the generic diagnosis will soon be changed. Therefore I propose the following short diagnosis.

Varroa, nov. gen., like *Laelaps* C. L. Koch and *Hypoaspis* G. Canestrini, but upper jaw of chelae wanting and lower jaw fixed in stead of movable. — I think it is not quite superfluous to remember here that in *Laelaps* C. L. Koch the males have only styliform mandibles, while the females are provided with cheliform ones, and that in *Hypoaspis* G. Canestrini both sexes possess cheliform mandibles. There is still another genus of *Laelaptinae* in which the man-

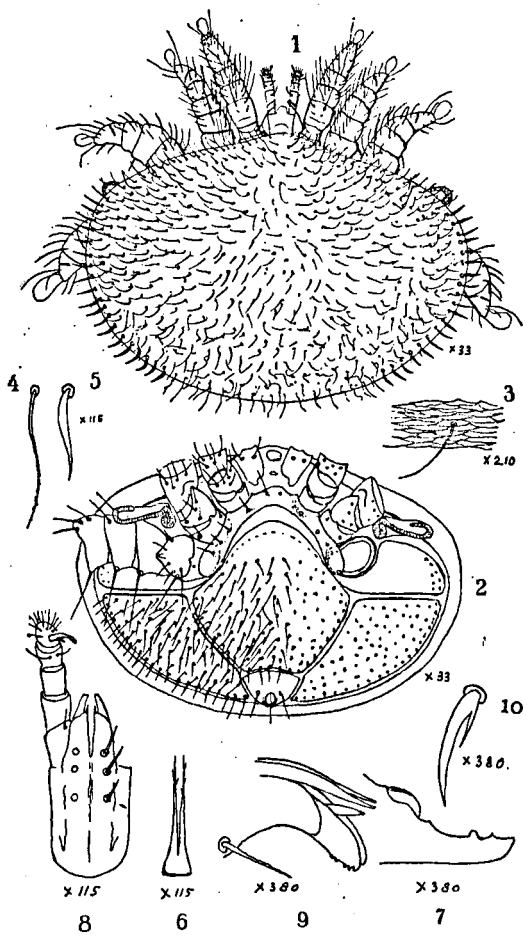
dibles of the ♀ (the ♂ is unknown) are anomalous, viz. *Berlesia* G. Canestrini, in which the upper jaw is rudimental and the movable lower jaw on the contrary normal; but this genus seems to me, according the ventral shields, not closely related to the genus in question.

Varroa Jacobsonii, nov. spec.

Female. *Length* 1065; width 1575 μ. — *Colour* dark brown. — *Shape* a transverse oval, flat, scarcely convex dorsally, a shape extremely rare in Acarids, and I may say immediately indicating the parasit, and especially a parasit which must press itself in a narrow room, as there is an arm-pit of a lizard, e. g. *Geckobia* Mégnin (*Thrombidiidae Geckobiinae*) or *Aponomma* Neumann (*Ixodidae Ixodinae Ixodae*), or between head and thorax, or between thorax and abdomen of Insects, e. g. *Antennophorus* Haller (*Parasitidae Antennophorinae*). — *Texture.* Dorsally we observe narrow scales (fig. 3) which generally are ranged transversally like in our fig. 3, at the most following the posterior edge of the abdomen, consequently forming crooked rows with their concavity forward, therefore almost like the direction of the hairs (see fig. 1). — On the ventral side the shields are formed by the same narrow scales, but the direction of the rows is inverse, viz. with their concavity backward, following almost the crescent-shaped sternal shield. — Unprotected parts finely wrinkled. On the sufflexed margin of the dorsal shield the scales follow the edge.

Dorsal side (fig. 1) wholly protected by one shield. It is nearly oval, with the posterior edge more rounded than the anterior one, and here the median part of the edge slightly projects forward (too much in my drawing). The shield is densely hairy, and there are two kinds of hairs. Laterally one observes a row of about 19 slightly curved and sharply pointed bristles, as delineated under higher powers in fig. 5. Moreover the dorsal side is covered with rather concentrical rows of hairs, distally somewhat hairy themselves, as represented in fig. 4 under more amplifications.

As to the curve the hairs make, this is different as to the place they occupy, e. g. nearly all are concave forward but the hairs at the left half are directed to the left and at the right half to the right, whilst those in the posterior quadrant are curled and twisted sometimes in the manner of a hog's tail.



Ventral side. Tritosternum (fig. 6) rudimental; there is no demarcation of main trunk and laciniae; if we call the proximal part the trunk, this is very short, trapezoidal, wider posteriorly; the laciniae are rudimental too, for they

are only very thinly hairy distally. No *jugular shields*. *Sternal shield* (fig. 2) with a crescent-shaped fixed part and a ditto free band lying free over the coxae of legs II, III and IV, *which is a very singular property, hitherto unknown in Acari.* This free band is slightly excavate above coxae II, and provided with 5 pairs of bristles instead of 3 pairs; so it may be a sterno-metasternal shield, but if so it should have only 4 pairs of bristles; therefore it has one pair of bristles more than usual. No *metasternal shield* if not fused with the sternal one (see hereabove). *Genitoventral* shield nearly pentagonal, with one (rounded) angle forward; genital part of it small and bare; ventral part very large and covered with hairs of the same kind as those of the dorsal side. With two long sides it nearly touches the inguinal shields, and with a short side, slightly concave, it is turned towards the *anal shield.* This is nearly semicircular, with rounded side backward and a slightly convex side forward, with the small anus far backward and behind the anus the narrow crescent-shaped *cribrum*, moreover the usual three rather long and straight circumanal hairs. *Inguinal shields* enormous, nearly triangular, one straight side anteriorly, horizontal; one slightly concave side nearly contiguous to the genitosternal- and anal shields; and finally the rounded third side nearly contiguous to the ventrally sufflexed margin of the dorsal shield. They are wholly covered with hairs. There are no real *pedal shields* but each foveola is surrounded by a chitinous ring (I have drawn one of the IVth left leg: at the right). *Metapodial shields* very large and especially enlarged outward, so that even their greater part is situated nearly outward of the fourth leg. The most curious characteristic is the situation and the appearance of the *peritrematal shields*; these are only attached to the ventral surface with that part which bears the *stigma*, whilst their remaining part (almost three quarter of the whole) is free, so that occasionally the leg IV may come between the ventral surface and the peritrematal shield (as is shown in fig. 2 at the left); it may

even occur that when the creature is lying on its ventral side and occasionally is somewhat pressed by the covering glass, the distal end of the peritrematal shield is making its appearance between legs III and IV (see fig. 1). There is a wide *ventrally sufflexed margin of the dorsal shield* all around, except at the most anterior portion before coxae I and before the head. The *stigma* is on the usual place viz. between (so-called) the coxae III and IV; its unusual forward situation is a result of the unusual contraction forward of the legs. The *peritrema* is ∩ -shaped, an unusual phenomenon in *Laelaptinae*, in my opinion not explicable by the contraction of the legs forward, nor by the parasitism of the creature.

Epistome (fig. 1) a free and well chitinized rounded piece.

Mandibles (fig. 7) very short, not reaching when wholly retracted the sternal shield: *chelae* apparently with a bladder-like rudiment of an upper jaw, without any trace of tibial and tarsal sense-organs, with a normally formed lower jaw, which however is not movable but firmly fixed to the tibia, without any trace of former joint. This lower jaw is provided with an almost vanishing apical incisor, a minute second incisor, and a knob-shaped low canine tooth; no molar. Apparently these mandibles serve to pierce the less chitinized parts of the skin of the bee between head and thorax or between thorax and abdomen, or else, to suck juices from the host. Though these mandibles have no anchor-shaped fixation-apparatus like in the *Ixodidae* and in the genus *Berlesia* G. Canestrini among the *Laelaptinae*, yet they remember somewhat the mandibles of the latter.

Maxillae. The first characteristic which strikes us is that there are not 4 pairs of bristles on the ventral side of the capitulum (fused basal pieces or coxae of the maxillae) (fig. 8) but only 3 pairs, being hair IV (of the outer coxal part) wanting. The second feature is that hairs I, II and III do not stand in a triangle but one after the other. A third character is that we in a superficial examination should mean to see only well developed horns or outer

malae, and minute rudimental inner malae, between which there is a deep cleft. This however, is a mystification, for if we dissect the head and observe it from aside, we see that the hypostome consists of the same parts as usual, only with another configuration, the result of the changed manner of living. We distinctly discern (fig. 9) the long flat transparent horns or outer malae (invisible on a ventral aspect) apt to pierce; further the thick well chitinized inner malae, crooked downward and ventrally provided with minute teeth directed backward, thus being an excellent sawing- and fixation organ, and simulating, though in rudiments, the beautiful rasp-shaped hypostome of *Ixodidae;* and finally the tongue or lingua, perfectly smooth, without any trace of fine hirsuteness, on the contrary more being an organ apt to pierce than one to lick. *Palpi* filiform, equal in thickness throughout, short, for the rest normal; dorsally (fig. 1) the trochanter is bare, the femur provided with only one central hair directed inward and curved forward. Ventrally the trochanter (fig. 8) with only one distal and inner hair; femur and genu bare, without cleaning-materials; tibia normal, tarsus normal; only the so-called fork or comb is bidentate (fig. 10) and one of its teeth is small.

If we now imagine that the two mandibles take a more ventral situation, and place themselves between the two horns and above the tongue, and that the horns or outer malae touch each other above the so unusually placed mandibles, we may fancy how originated the well known rostrum of the *Ixodidae.*

Legs. All the legs are shorter than half the length of the creature and rather thick. It may be that legs IV including the sucker are somewhat longer. Legs I are the shortest and narrowest; the other ones increasing slightly in length and thickness. Dorsally the legs (fig. 1) are rather hairy, being provided with two rows of hairs (like in the parasitical *Spinturnicinae*). Only the legs I and II are provided with the lateral rows. Legs I, II and III are also

ventrally hairy; only legs IV have ventrally only one distal strong thorn on each joint (fig. 2). The ambulacra have no claws and consist only in an enormous almost bell-shaped adhesive disc, being thus well fit to fasten the creature on the smooth surface of a flying and always moving bee.

Habitat parasitical on *Apis indica* Fabr.

Patria: Java (Semarang).

Collected by Mr. Edward Jacobson and presented by him to the Zoological Museum at Leyden.

Remark. The Museum above mentioned received these mites (four females) and the bees, from Mr. Edward Jacobson at Semarang. The larvae, protonymphae, deuteronymphae and males are not yet known. They may be found in bee's nests, in the dust and dirt at the bottom of the nests and in the honey-combs, probably on the larves of the bee. At all events the discovery of these female mites is a fortunate one and a brilliant contribution to parasitism. Mr. C. Ritsema Cz., Conservator to the Museum, had the kindness to send them to me for examination.

Arnhem, April 1904.